

IN THE CLAIMS:

Please cancel claims 2-4, 21-23 and 75 for possible inclusion in a continuing application.

Please amend claims 1, 8, 24, 50 and 66 as follows:

B1
sub
C1

1. (Twice Amended) A method of producing a semi-solid material without stirring, comprising:
heating a metal alloy to form a metallic melt;
regulating the transfer of an amount of the metallic melt into a temperature-controlled vessel; and
crystallizing the metallic melt in the vessel by cooling the metallic melt at a controlled rate less than 0.5 degrees Celsius per second without the use of a grain refiner and without mechanical agitation to form a semi-solid material having a microstructure comprising rounded solid particles dispersed in a liquid metal matrix and having an average diameter no greater than about 50 μm .

b2
sub
C2

8. (Amended) The method of claim 1, wherein the regulating further includes transferring the metallic melt into the vessel at a selected vessel temperature.

B3

24. (Amended) The method of claim 1, wherein the temperature-controlled vessel is a shot sleeve of a semi-solid forming press.

BY
21
C3

50. (Twice Amended) A method of semi-solid forming a shaped article, comprising:
providing a metal alloy, a temperature-controlled vessel and a mold;
heating the metal alloy to form a metallic melt;
regulating the transfer of an amount of the metallic melt into the temperature-controlled vessel; and
crystallizing the metallic melt in the vessel by cooling the metallic melt at a controlled rate less than 0.5 degrees Celsius per second to produce a semi-solid material having a microstructure comprising rounded solid particles dispersed in a liquid metal matrix;
feeding the semi-solid material from the temperature-controlled vessel directly into the mold; and
forming the semi-solid material into a shaped article.

BS
C11

66. (Amended) A method of producing a semi-solid material without stirring, comprising:
heating a metal alloy to form a metallic melt;
preheating a temperature-controlled vessel to a selected vessel temperature;
regulating the transfer of a select amount of the metallic melt into the vessel, the regulating comprising:
transferring the metallic melt into the vessel at a selected transfer temperature and at a selected transfer rate; and

BS
CV
Cont'd

controlling a differential between the temperature of the metallic melt during the heating and the temperature of the metallic melt during the transferring; and crystallizing the metallic melt in the vessel by cooling the metallic melt at a controlled rate without the use of a grain refiner and without mechanical agitation to form a semi-solid material having a microstructure comprising rounded solid particles dispersed in a liquid metal matrix.

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